

MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
FISHERIES LABORATORY, LOWESTOFT, SUFFOLK, ENGLAND

1981 RESEARCH VESSEL PROGRAMME

REPORT: RV CIROLANA: CRUISE 9
(PROVISIONAL: Not to be quoted without prior reference to the author)

STAFF

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DURATION

Left Grimsby 1225 h 8 October

Arrived Grimsby 0436 h 11 November

All times are Greenwich Mean Time

LOCALITY

North East Atlantic Ocean between 52°30'N and 30°00'N

AIMS

1. To deploy two upper bottom moorings at the offshore end of a line along 52°N down the continental slope west of Ireland.
2. To recover NEADS 5.
3. To recover and relay four upper bottom moorings east of the mid-Atlantic Ridge which were deployed on CIROLANA 6/81.
4. To lay six moorings (including one full depth mooring) across the Madeira Abyssal Plain at 30°N.
5. To deploy and recover fish traps where appropriate.
6. To recover four moorings deployed in the King's Trough area on CIROLANA 9/80.
7. To collect large volume water samples for ¹⁴C and ²²⁶Ra analysis.
8. To make CTD measurements and collect water samples for nutrient analysis.
9. To run an XBT section over part of the cruise track.
10. To do a repeated shallow CTD cast to examine effects of lowering rates on conductivity measurements.
11. To take box, boomerang and gravity cores and near bed water samples at various locations.
12. To collect surface water on passage for Neodymium analysis.
13. To run an on-line HIAC section across the continental slope.

NARRATIVE

RV CIROLANA sailed from Grimsby at 1225 h on 8 October, and after being delayed by gales in the English Channel on 9 October, proceeded to the Continental Shelf Edge at 52°30'N. XBT's were fired at 2 hourly intervals from 10°W on passage on the whole of the outward leg to Madeira. 50 l surface water samples were collected on passage 50 nm from the shelf edge, over the shelf edge then every 2° of latitude (except at 42°N) to 30°N. The on-line HIAC partical sampler was run from 50 nm from the shelf edge until the ship was over deep water.

After making contact with RV CHALLENGER to ascertain the position and release frequencies of the two newly laid moorings at 52°30'N (500m and 750m depth), RV CIROLANA proceeded to lay two upper bottom moorings at 1500 m and 2500 m along 52°30'N.

RV CIROLANA then sailed south, recovered and relaid four moorings deployed on CIROLANA 6/81 and recovered two upper bottom and one full depth mooring laid on CIROLANA 9/80. (42°25.6'N, 20°35.0'W, 41°45.0'N 21°55.7'W, 41°38.6'N 21°08.7'W). The fourth mooring at 42°23'N, 21°53.5'W was not found. A boomerang core was taken and five *Coryphaenoides rupestris* were caught in a fish trap.

A fish trap was launched near the Great Meteor Seamount (at 30°32.5'N 28°13.8'W) but recovered empty and an upper bottom mooring launched at 30°30'N 28°50'W. On top of Great Meteor Seamount handling trials for the box and gravity corers were undertaken before moving off east to launch two upper bottom moorings at 29°59.4'N, 27°21.3'W and 30°00.5'N, 25°21.5'W. The latter had in situ Ra detectors in line so a CTD cast with 30 l Niskins for Ra analysis was made. A further fish trap was deployed and recovered with 17 Amphipods.

At 30°N 25'W, CTD lowering rate trials were undertaken together with full depth CTD casts for nutrient samples, a full depth Gerard barrel casts for ¹⁴C analysis. A box core and gravity core were also taken. The deep Gerard barrel casts for Ra analysis was not commenced because the swell became too great for safer handling of equipment.

A full depth mooring (30°19.1'N, 23°23.1'W) and two upper bottom moorings (31°00.0'N, 21°50.1'W and 32°00.1'N, 20°00.18'W) were launched before doing a CTD station for nutrient analysis at 32°05.3'N, 19°35.4'W.

During the mid-cruise break in Funchal, Madeira, four frozen black scabbard fish complete with head and guts were purchased for study at Lowestoft.

On leaving Madeira, RV CIROLANA proceeded to 35°N 20°30'W to continue the line stations for ¹⁴C, nutrients and sediments begun at 30°N 25'W. ¹⁴C samples, box core, boomerang core, Ra samples, CTD and nutrient samples were completed at this position. At 36°N 19°38.4'W Ra, CTD and nutrient samples were taken and at 37°18'54.0'W just CTD and nutrient measurements were made. A box core was taken on the Horseshoe Rise and a box core, boomerang core CTD and nutrient samples made at 39°N 16°49.48'W.

With little working time remaining RV CIROLANA commenced the journey back to Grimsby stopping to take boomerang cores on passage at 42°53.7'N and 45°42.7'N. During this steam the Gerard barrel wire was removed from the trawl winch and an attempt made to replace the trawl warp.

RV CIROLANA docked at 0436 h on 11 November 1981.

RESULTS

1. All 16 current meters recovered had full records. A preliminary analysis revealed that all data records were good apart from one meter from the King's Trough area which gave anomalously high current speeds.
2. 15 ^{14}C , 5 $^{226/228}\text{Ra}$ and 10 ^{226}Ra samples were taken. An initial examination of five of the ^{226}Ra samples were seen to be in agreement with other data collected in the area.
3. Nutrient samples were also seen to be consistent with data collected further south on the GEOSECS experiment, although there appears to be an interesting region of lower bottom values at 30°N .
4. An initial examination of the CTD and water bottle data reveals that the differences in most readings lie within the specification of the equipment used. A calibration of the CTD for this cruise is being prepared.
5. One gravity core, five boomerang cores and four box cores were collected together with a little sediment from the handling trials on top of Great Meteor seamount
The gravity and boomerang cores were sectioned longitudinally and photographed. Subsamples have been taken, where appropriate, for mineralogical and chemical analysis. The box cores were subsampled for ^{14}C , ^{210}Pb , x-ray radiographic, grain size, mineralogical and chemical analysis. Subsamples were also squeezed to extract pore water which has been analysed for nutrients, Eh and pH. An initial examination of the concentration of silicate in the top 20cm of sediment reveals that there are quite different concentration gradients at different sites.
6. Various computer programs have been modified or developed to assist in the analysis of chemical and water bottle data.

P A Gurbutt
(Scientist-in-Charge)
16 November 1981

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E W Pearson - Fishing Skipper

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